

AGRICULTURE IN THE NETHERLANDS: ITS RECENT PAST, CURRENT STATE AND PERSPECTIVES

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Abstract: The driving forces that determine the prospects of the agricultural sector are dominated by international and European developments related to the demand for and supply of products. In this context, European policy, (such as the CAP), and national policy (e.g. nature management) can greatly influence the development of the agricultural sector. A further reduction of the support by the government forms an important element in the expected future developments.

Key words: Dutch agriculture, current state and perspectives of agriculture

1. Introduction

Although their shares in the national economy has declined steadily, agriculture and its allied sectors are still important in the Netherlands. The so-called agro-complex, which covers all the economic activities in production, processing and distribution of agricultural products (food and non-food), equated to 9.6% of the total national added value (i.e. 47.9 billion Euro) in 2007. Moreover, it offers employment to over 600,000 jobs, which equals almost 10% of national employment (*Table 1*). A Porter analysis of the competitiveness of the Netherlands in 2003 showed that of

the one hundred most competitive flows of goods in the Netherlands, about half came from the agriculture and food cluster. It is therefore not without a reason that the Innovation Platform, appointed and chaired by Prime Minister Balkenende, designated flowers and food as the first key area of the Dutch economy (Ministry of LNV, 2005).

Dutch agriculture has become dependent on foreign countries for the import of raw materials and for the export of agricultural products and commodities. As such, the agricultural sector is greatly influenced by the global economy. As *Silvis and Leenstra* (2009) show, the proportion of agricultural products and food in total Dutch exports of goods services is fairly high (17%). Every year, the agricultural sector generates an extensive positive export balance of over €20 billion (€23 billion in 2007). In total, about 70% of the economic significance of the agricultural complex relates to exports, the majority of which (about 80%) are destined for other EU member states. Germany and the United Kingdom are the largest buyers of Dutch agricultural products (Ministry of LNV, 2009). After the United States and France, the Netherlands is the third largest exporter of agricultural products. In combination, ornamental products, meat dairy products and vegetables account for almost 75% of the net exports (*Silvis and De Bont*, 2005).

This article provides an overview of the recent past, the current state and the perspectives of the Dutch agricultural sector. It draws heavily on the work of the LEI (Agricultural Economics

Table 1. Economic significance of the Dutch agro-complex

	Added value (× 1,000 million euros)			Employment (× 1,000 annual labour units)		
	1995	2001	2007	1995	2001	2007
* Agro-complex (total)	32.4	40.5	47.9	659	717	672
<i>Share of national total (%)</i>	12.0	10.2	9.6	11.6	10.8	9.9
* Agro-complex on basis of domestic agricultural raw materials	20.2	21.5	25.6	430	416	390
Primary production	8.4	7.6	8.0	189	184	169
Processing	3.0	3.2	4.4	54	50	42
Supply	6.5	8.1	9.9	135	137	130
Distribution	2.3	2.6	3.2	53	45	50
* Processing, supply and distribution of foreign agricultural raw materials	10.9	15.3	18.3	190	226	218
* Agricultural services, gardening businesses and forestry	1.3	3.7	4.0	39	75	64

Source: LEI Wageningen UR

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Research Institute), which forms part of Wageningen University and Research Centre. The article utilizes a descriptive analytical approach, supported by historical and current data. Its structure is simply based on the second part of its title. That is, section 2 deals with the Dutch agriculture in the recent past (1900-2000). In this section, we pay also some attention to the introduction of the European Common Agricultural Policy (CAP), because this policy formed and still forms the context of today's agricultural reality. Then, section 3 focuses on the current state of the agricultural sector, but will also discuss some Dutch policy issues of topical interest. Section 4 concludes and presents a future outlook by describing the perspectives for agriculture in the Netherlands.

2. Dutch agriculture in the recent past

For centuries, Dutch agriculture has performed many functions in the economy, and has played many roles in society and in caring for the land. Moreover, it has dominated the landscape and the environment in rural areas, as farmers cleared forests to create fields, built houses and outbuildings, laid out gardens, and cultivated the land for agricultural purposes. This section sketches the history of Dutch agriculture. Sub-section 2.1 serves as a sort of preamble and describes succinctly the situation until 1950. Sub-section 2.2 continues with the agricultural developments in the second half of the 20th century.

2.1 1900 – 1950²

In the beginning of the last century, agriculture in the Netherlands was concentrated on small-scale mixed farms, with some cows, and some other farm animals, such as pigs for meat and horses as beasts of burden. Arable land and grassland plots were quite small and primarily used to produce fodder for the animals on the farm. The rest of the production was traded on local weekly or monthly markets or used for consumption by the farmers themselves. In general, and probably in line with the daily struggles of farmers in other countries, Dutch farmers worked a hard living, especially from the nutrient-poor sandy soils. Many people earned their livelihood from agriculture; around 1900 there were approximately 2.8 million workers in agriculture.

But then, at the beginning of the 20th century, the situation for farmers became more favourable and rosier. As shown by *van den Ban and Bauwens* (1988, pp. 215–216), “a process of change started on the sandy soils towards a type of agriculture where farmers got their income from the sale of animal products and produced arable crops to feed their animals.” This process was accelerated with the introduction of fertilizer, which made it possible not only to increase

yields and to overcome the problems of shortage of manure, but also to change heathland into arable land and pastures. But also the development of efficient systems for input supply, processing, marketing and credit, largely by co-operatives, had a significant impact on the traditional livelihood of small farmers, especially in the regions with poor sandy soils.

The economic crisis of the 1930s and the food shortages during and after the Second World War forced European governments to intervene intensively in the agricultural sector. This intervention varied greatly from one country to another (see *Tracy*, 1989). The Dutch government policy was aimed at the recovery of the national economy and increasing industrial production and capital investment. In order to increase the purchasing power of the population, the prices of food and other essential items were kept artificially low. The increase of agricultural production was achieved by making farm labour more effective through a more general use and deployment of machines and through yielding more harvest from both the soil and the animals. Increase of the yield was achieved by, *inter alia*, using artificial fertilizer, pesticides and herbicides, and high-energy fodder. Also land consolidation policies – which tried to reduce the number of parcels, to improve their shape and their location in relation to farm buildings, roads and villages – were seen as important in boosting food production. In fact, land consolidation became a central part of the structural policies for agriculture (*van den Noort*, 1987).

2.2 1950 – 2000

European Integration started on 9 May 1950 with the Schuman Declaration that proposed the establishment of a European Coal and Steel Community. Also agriculture had to become involved in European and international integration processes, because agriculture was and is an important part of the economy. The Treaty of Rome, signed in 1957, was the founding treaty of the European Economic Community (EEC), which later became the European Union (EU). This treaty laid down the initial provisions for the economic community, including the development of the internal market and the common agricultural policy (CAP). In fact, a separate chapter of the EEC Treaty stipulated in its first article that agriculture and trade in agricultural products should be part of the common market (article 38 of the EEC Treaty; currently article 32 of the EU Treaty).³ Due to the agricultural policies already in force in all member states, this internal liberalization was conditional on the creation of a common agricultural policy as a substitute. The greatest contribution made by European agriculture commissioner Mansholt and his collaborators was to ensure that, despite the inherent difficulties, the chapter on the common agricultural policy did take shape. In consequence, agriculture therefore

² For a good and accessible overview of the Dutch agriculture until 1950, see Bieleman (2006).

³ The common market refers here to a free trade area with common policies on product regulation, and freedom of movement of the factors of production (capital and labour) and of enterprise.

became a frontrunner rather than an obstacle to the integration process in Europe.

If we look at the Dutch situation more deeply, then it appeared that after the Second World War agriculture was in a process of transformation. New technological developments as well as improved education and better accessibility resulted in a flourishing rural economy. Moreover, the Dutch agriculture changed from a labour intensive mixed farming system, characterised by a diversification of agricultural production, into a highly specialized intensive farming system with high inputs of capital and labour. The new system was totally designed to maximize the production of pigs, cows and poultry. The process of intensification and modernization of the Dutch agriculture started around 1960 creating a type of farm that in academic circles became known as footloose agricultural farms.

The creation of this 'new' type of farm coincides with the expansion of dairy farming in the Netherlands, which – according to the Dutch dairy board (www.produivel.nl) – gained momentum after 1960. Indeed, dairy production, which is one of the most important production sectors in Dutch agriculture, grew enormously since the 1960s. Although the number of dairy farms decreased dramatically, the milk production per hour and per hectare showed a strong increase in particular until 1985 (the European Community introduced a milk quota system in 1984 to control milk production). As a result, from the 1960s onwards, the Netherlands have become a major exporter of dairy products, selling about 60 percent of domestic milk production abroad.

Table 2. Development in dairy farming in the Netherlands (1960–2000)

Period	Land / farm (ha)	Yield / cow (kg)	Cows / farm (#)	New technological input
1961-1965	14	4,120	18	* Wide-scale introduction of milking machines * Artificial insemination
1966-1970	16	4,350	22	* Higher fertilizer use on grassland * Specialisation in dairy
1971-1975	20	4,875	34	* Milk cooling tank * From hay to grass-silage * Loose housing system with cubicles
1976-1980	22	5,340	48	* Maize feeding * Higher concentrate feeding
1981-1985	25	5,700	54	* Cow identification for individual feeding * Wide-scale use USA Holstein-Friesian blood
1986-1990	29	6,575	49	* Embryo transplantation
1991-1995	31	6,975	51	* Environmental protection (e.g. manure injection)
1996-2000	35	7,525	55	* Introduction milking robot

Source: *van Horne and Prins, 2002, p. 9.*

In the period between the 1930s and 2000, the Dutch population doubled, but milk production almost tripled.

These developments should be seen against the background of changes in the economic environment, institutions and market conditions. *Van Horne and Prins (2002)* show that especially technological change has led to a spectacular increase in the total production of milk (*see Table 2*).

To summarise *Table 2*, the period 1960–1980 can be characterised by a fast growing production of milk per farm. This was accompanied by a strong growth in labour productivity. These developments were largely due to a number of changes in production technology, which were stimulated by the agricultural policy of the Dutch government and afterwards by the agricultural policies of the European Community. As a result, during the 1970s milk production in the European Community increased very quickly. The self-sufficiency grew well over 100%. There were few opportunities to export milk products to destinations outside Europe and these were supported by high export subsidies. In those days, stocks of milk powder and butter became 'mountains'.

In 1984, the European Community imposed a quota on the production of milk to stop surplus production. Due to this milk quota, it became impossible to increase the production of milk any further. In addition, the focus of society became more directed at the quality of the environment. New legislation came into force to protect the environment and to reduce pollution. For the dairy sector, legislation aimed at reducing air and water pollution was particularly important. Dairy farms have to satisfy the criteria for environmental licences, entailing costs in the form of specific investments required to adapt the concern, for example to be able to store enough manure in the right way and to apply it properly to the land. These regulations are also increasingly influenced by European policy. In addition more farmers try to distinguish themselves in the market by sustainable production (organic or ecological products) and thus in some cases obtaining higher prices for their products. From the above, it can be concluded that the development in the dairy sector during the last two decades of the 20th century differed in many respects from that of the period 1950–1980. This conclusion is not restricted to the dairy sector, but applies generally to the whole primary agriculture.

If we compare the importance of the agricultural sector in the second half of the 20th century with that of today, then we see that during 1970, agriculture was a more important sector in the Dutch economy than it is nowadays (*see Table 3*).

Table 3. Share of agro-complex in the Dutch economy, 1970–2007 (in%)

	Agro-complex (total)		Primary sector	
	Value added	Employment	Value added	Employment
1970	15.3	16.4	5.8	6.4
2007	9.6	9.9	1.6	2.5

The fall in the share of primary agriculture within the Dutch economy was until about 1990 primarily a matter of prices that were becoming unfavourable. Later, the growth in

production volume was also lagging behind, particularly as a result of environmental measures that were gradually being tightened and changed in the agricultural policy of the European Union. In the next section, we will see how these measures and policies have influenced and shaped today's agriculture and food production systems.

3. The current state of the Dutch agriculture

3.1 Current position of the agricultural sector in the Netherlands

Today, primary agriculture and horticulture still account for about two third of the land use in the Netherlands. The area of cultivated land in the Netherlands is approximately 1,930,000 hectares, of which some 53% is classified as grassland and 42% as arable land, while 3% is cultivated for vegetables and fruit and 2% for flowers, ornamentals and seeds.

The number of farms is declining quite rapidly – during the past 25 years, the number of farms decreased by an average of 2.3% per annum (see Table 4). In 1950, there were some 410,000 farms in the Netherlands, while by 2008 the number had decreased to less than 80,000. The total area under cultivation has decreased by only 16% over that same period, so the average farm is much larger today and increases in scale are an important trend. The bigger farms account for a continually larger share of production. At the same time, however, there are still many smaller farms, including part-timers, and farms which are broadening their scope. There is therefore a dual development with the most production and income generation among the big farms. Sustainability is a topical issue, but after rapid improvements until around 2000, further gains in environmental performance are more difficult to achieve (*Silvis and Leenstra, 2009*).

Table 4. Agricultural holdings by the five major types (1985–2008)

	1985	1990	1995	2000	2005	2008
Grassland base livestock	63,381	58,326	54,613	47,075	41,098	38,883
Horticulture	18,907	17,975	15,889	13,281	10,239	8,542
Arable crops	17,560	16,265	14,663	13,749	12,358	11,175
Pigs and poultry	12,756	11,807	10,414	8,382	6,083	5,545
Mixed	17,542	14,778	11,873	9,850	7,532	6,679

Source: LEI Statistics (see www.lei.wur.nl/UK/statistics/)

Let us take a closer look at the three most important agricultural sectors in the Netherlands: the dairy sector, arable farming and horticulture. If we start with the dairy sector then reality dictates that a lot of dairy farmers see

further increases in scale as the best way of continuing to operate on a profitable basis even though the price paid for milk is falling (hard). As the Ministry of LNV (2005) shows, in 1980 the Netherlands had almost 50,000 dairy farmers, each with an average of 40 to 50 cows. Currently, there is only half that number, with an average of more than 60 cows. If the trend continues, then there will be about 14,000 dairy farms in 2015 with an average of 80 cows. However, size is not the only significant factor: given the enormous differences in cost price between comparable holdings, many farmers could make their operation more profitable by means of better management. Moreover, not all the farmers want to increase the size of the farm in order to be able to produce world for world market prices. A growing number of farmers is succeeding in finding new sources of income, either at the farm or elsewhere (multifunctional agriculture or diversification). They can provide services for specific target groups in the form of access to nature and nature management running a campsite, care (including childcare), cheese making and farm shops.⁴ As a result, small regional supply chains are being set up to provide special high-quality products for niche markets.

In 2008, the Netherlands had about 11,000 arable farms, which employed more than 24,000 people. The predominant arable crops are cereals (especially wheat), fodder crops, sugar beets, table potatoes and legumes. The total area under arable crops is 812,812 ha. Most arable crops are frequently found on sandy soils and therefore it is not surprising that the province of *Noord-Brabant* (in the south) and the provinces of *Gelderland* and *Overijssel* (in the east) have the most arable farms. In recent years, rapeseed is being grown in the northern provinces and its oil is processed to fuel for cars and ships. Dutch arable farms are relatively small in area. Because the price of land is high, the process of scaling up is slower than in other European countries. In the past, this was compensated for by intensive farming practices but environmental requirements sets limit to further intensification.

In terms of production and export value, the horticulture sector is by far the most important sector in Dutch agriculture. Its export value in 2003 was 6.5 Billion euro's. Horticulture includes both the production of ornamentals and of edible crops. The first group – ornamental flowers and plants – is the largest. Dutch producers account for 70% of the total European Union export of ornamentals and 93% of the total export of flower bulbs. The largest bulb buyers are the United States, Germany and Japan. Germany, the United Kingdom and France are the largest buyers of Dutch flowers and plants. The second group of horticultural products consists of edible crops. Nearly a quarter of European vegetable exports

⁴ However, not only livestock farms but also (and in particular) arable farms are involved in diversification activities. According to the Ministry of LNV (2005), in 2003 almost 40% of primary agricultural holdings were engaged in such activities. For example, half of the dairy farms are active in nature management. However, as recently shown by Heringa (2009) the economic significance of diversification is rather small especially when compared to the economic value of primary agriculture.

originate from the Netherlands, with Germany and the United Kingdom as the largest buyers. In fact, the Netherlands accounts for more than a third of the total European export of fresh vegetables, particularly mushrooms, tomatoes, lettuce, cucumbers, cauliflower and bell peppers. The Netherlands exports about 540 million kilograms of tomatoes (333 million kg of tomatoes-on-the-vine). The main markets for Dutch tomatoes are Germany and the United Kingdom.

Much of the horticulture is practised under glass (in glasshouses). About a quarter of all the glasshouses in the world are located in the Netherlands, and between 75 and 80% of Dutch glasshouse products is exported. In 2008, more than 60.000 people work in the glasshouse production sector. The oldest glasshouse areas in the Netherlands are the *Westland area* (bordered by the cities of Rotterdam, Delft and The Hague) and the area around Aalsmeer (south of Amsterdam).

3.2 Agriculture, nature and food quality in 2009⁵

The policy of the Dutch Ministry of Agriculture, Nature and Food Quality for 2009 is focused largely on sustainability. The Ministry has defined three core areas: the green economy; food and consumer; nature, landscape, vegetation and a vital countryside. The attention devoted to sustainability is manifested in forms such as the measures for sustainability in greenhouse horticulture, for animal friendly stall systems, and for low-energy and selective fishing methods. The Ministry of Agriculture, Nature and Food Quality is coordinating the bio-based economy theme of the Government's *Clean and Efficient Programme*. The bio-based economy theme includes a review of bio-refinery technology suitable for the optimum utilisation of all parts of plants, in particular the non-edible parts. The Ministry of Agriculture, Nature and Food Quality's *Food and Consumer* policy memorandum will contain a detailed specification of the objective of the food policy in which a 'conscious choice' will be assigned a prominent place. The Ministry intends to ensure that consumers are offered an opportunity to make conscious and sustainable choices when buying food. The nature and landscape policy devotes a great deal of attention to the *Landscape Agenda* and to the designation of the 162 Natura 2000 regions in the Netherlands.

The Ministry of Agriculture, Nature and Food Quality introduced an additional package of incentive measures in April 2009 as part of the *Working on the Future* policy agreement of the Dutch Cabinet. This agreement includes an envelope of 50 million euros for a sustainable agricultural sector. The Minister of Agriculture, Nature and Food Quality intends to use these investments to provide incentives for the economy and to make a contribution to the Government's sustainability targets. In 2009 and 2010, twenty million euros will be allocated to the acceleration of the development of and investments in sustainable stalls: an equal amount will be

allocated to the development of combined air-scrubbers for the poultry sector. In addition to these two major measures, the Ministry of Agriculture, Nature and Food Quality is also investing in measures such as the plans for an international algae research centre. The Ministry has also allocated 5 million euros to the clearance of horticulture greenhouses distributed throughout the Netherlands.

3.3 Financial and economic crisis

In 2009, the primary agricultural sector was confronted with a sharp fall in income for the second consecutive year. Although the volume of the sector's production increased by almost 3% in 2009, the price of the products fell by almost 9%. As a result, the entire sector's production value fell by more than 6% to almost 22.5 thousand million euros (including agricultural services) in 2009. The production value of plant products fell by about 4.5%, less than the almost 11% decline in the production value of the livestock farm products. This year's total production value of the horticulture sector is approximately the same as that of the livestock sector (more than 8.5 thousand million euros), while the production value of the arable farm sector – including fodder crops – amounts to more than 2 thousand million euros. The cost of the goods and services purchased by the agricultural and horticultural sector fell by about 4.5% in 2009, primarily due to the approximately 15% lower cost of animal feeds and fertiliser. On balance, the net added value of the sector decreased by more than 15%. The net operating income for the families of the farmers or horticulturalists – after the deduction of interest payments, wages and long-term leases – fell even more sharply, namely by almost 50%. It is striking to note that in 2009 the total amount of the subsidies received by the agricultural sector, primarily comprised of farm payments, is slightly higher than the sector's net income of 800 million euros. When account is taken of the decline in the number of farms and inflation then the purchasing power of the farm family's operating income fell extremely sharply in 2009. In 2008 and 2009, as was the case in the two previous years, the development in the Netherlands' agricultural and horticultural sector incomes is expected to lag behind that in other EU countries (*De Bont et al.*, 2009).

4. Conclusions and perspectives for agriculture in the Netherlands

The driving forces that determine the prospects of the agricultural sector are dominated by international and European developments related to the demand for and supply of products. In this context, European policy, (such as the CAP), and national policy (e.g. nature management) can greatly influence the development of the agricultural sector. It is expected that the growth in the world's population will

⁵ This sub-section is almost entirely taken from Berkhout and van Bruchem (2009).

decline to around 1% per year over the coming years. However, the global demand for food will be determined more and more by the development of incomes per capita than by the growth in population. For the richer countries a higher income does not mean a greater demand for food. Moreover, due to the continuing individualization the demand for agricultural products is likely to diversify, on the one hand due to increasing immigration and familiarity with other cultures and new possibilities, and on the other hand to the increasing need for variety, perception, convenience, health, quality and image (Silvis and de Bont, 2005).

In 2005, the Dutch Minister for Agriculture, Nature and Food Quality published a policy document on the future of the Dutch agricultural sector, titled "The Choice for Agriculture". In this document, the cabinet expresses its faith in the future of the agricultural sector. Favourable prospects are still foreseen for greenhouse and open field horticulture. A further reduction of the support by the government forms an important element in the expected future developments. The policy document sees the setting up of new activities within agricultural holdings – diversification activities – as a possibility for securing the continuity of holdings. In addition, the emphasis is placed on reducing cost prices through increases in scale. According to the document, the entrepreneurs must be given more scope, and the role of the government could be limited. A debate is announced regarding the milk quotas and about the implementation of the income payments. Currently, the payments in the Netherlands are implemented on the basis of a historical reference per farm.

Thus, although the economic significance of the agricultural sector will remain large, it will nevertheless decrease in relative terms. With an average decline of more than 3% per annum, the number of farms will have decreased to fewer than 60,000 by 2015. This is more than 30% below the almost 84,000 farms in 2004. But not only the number of farms will dwindle down, also the acreage of agricultural land will continue to decline in the coming years, although the great majority of this land will continue to be used for agricultural purposes. As a result of urbanisation, this decline will be more marked in the west of the Netherlands and the south and east of the country than it will in the north. The horticulture sector will be able to retain its position in the west of the Netherlands. The acreage of arable land will decrease in the north of the Netherlands, since relatively large amounts of the contracting starch potato and sugar beet crops are cultivated in this region. The land no longer required for these crops will be taken over by dairy farms. When expressed in terms of the number of cows, the decline in dairy farming is most pronounced in the provinces in the west of the Netherlands. As a result, the share of the other

provinces, in particular those in the north of the Netherlands, is increasing. No major shifts are forecast in the location of the intensive livestock farming complex; these farms are concentrated in the south, middle and east of the Netherlands, and this will continue to be the case (Silvis and De Bont, 2005).

References

- Ban, A.W. van den and A.L.G.M. Bauwens. 1988.** Small farmer development; experiences in the Netherlands. *Quarterly Journal of International Agriculture*, 27 (3–4), pp. 215–227.
- Berkhout, P. and C. van Bruchem (eds). 2006.** *Agricultural Economic Report 2006 of the Netherlands: Summary*. The Hague, LEI Wageningen UR.
- Berkhout, P. and C. van Bruchem (eds). 2009.** *Agricultural Economic Report 2009 of the Netherlands: Summary*. The Hague, LEI Wageningen UR.
- Bieleman, J. 2006.** Dutch agricultural history c. 1500-1950: a state of research. pp. 283-294. In: E. Thoen and L. van Molle (eds). *Rural History in the North Sea Area: An Overview of Recent Research, Middle Ages – Twentieth Century*. Turnhout, Brepols, CORN Publication Series 1.
- Bont, C.J.A.M. de, W.H. van Everdingen, A. van der Knijff en H.A.B. van der Meulen, 2009.** Actuele ontwikkeling van resultaten en inkomens in de land- en tuinbouw in 2009. Rapport 2009–088. The Hague, LEI Wageningen UR.
- Heringa P.W., 2009.** *Goed geboerd?! Een regionaal-economische analyse van multifunctionele landbouw*. MSc-thesis, Wageningen University, Chair of Regional Economics.
- Horne, P. van and H. Prins. 2002.** *Development of Dairy Farming in the Netherlands in the Period 1960–2000*. The Hague, Agricultural Economics Research Institute (LEI), Report 2.02.07.
- Ministry of LNV. 2005.** *The Choice for Agriculture; A Vision of the Future of Dutch Agriculture*. The Hague, Ministry of LNV.
- Ministry of LNV. 2009.** Homepage of the Dutch Ministry of Agriculture, Nature and Food Quality. http://www.minlnv.nl/portal/page?_pageid=116,1640381&_dad=portal&_schema=PORTAL, accessed 18 November 2009.
- Noort, P.C. van den. 1987.** Land consolidation in the Netherlands. *Land Use Policy*, 4 (1), pp. 11–13.
- Silvis, H. and K. de Bont (eds). 2005.** *Prospects for the Agricultural Sector in the Netherlands; The Choice for Agriculture, Background Report*. The Hague, Ministry of LNV, and Wageningen, Wageningen UR.
- Silvis, H.J. and F. Leenstra (eds). 2009.** *Prospects for the Agricultural Sector in the Netherlands; Economic and Technological Explorations*. The Hague, LEI Wageningen UR.
- Tracy, M. 1989.** *Government and Agriculture in Western Europe 1880–1988. Third Edition*. New York and London, Harvester Wheatsheaf.